Incidence of Systematic Explicit Instruction of Metacognitive Reading Strategies on Students' Academic Achievement

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This project aims at researching on the effectiveness of explicit instruction of metacognitive reading strategies on tests taken to 20-30-year-old university students from Orán, a city in the north-west of Salta, in Argentina, whose native language is Spanish. It explores the field of language teaching and learning seen from the cognitive perspective. It is a qualitative-quantitative, process-oriented, small-scale, subjective, phenomenologist, and quasi-experimental, prospective action research work with controlled intervention focused on making students aware of the metacognitive strategies needed to be able to comprehend field-based expository text types. It is meant to help them improve their ability to deal with definitions, descriptions, classifications, narrations, instructions and arguments by putting metacognitive strategies into practice. In 2022, both the control and the experimental group attended a compulsory reading comprehension course in L2, English, in the 4th year of the Nursing Training Bachelor Studies offered by the School of Health Sciences at the National University of Salta. Only the experimental group received instruction regarding metacognition. The data collected included students' level of English, general reading comprehension level (based on the CEFR, 2020), metacognitive awareness of reading strategies before the period of instruction and after the practice tests taken, scores compared out of ten practice tests on different text types, metacognitive strategies put into practice while doing each practice test, frequency of use of each metacognitive strategy. Based on the qualitative and quantitative information collected from the experimental group, the teacher will interpret the results to assess academic achievement.

Keywords: Metacognition, Reading Strategies, Field-Content Based Texts, Expository Text-Types, Effectiveness, Academic Achievement

1. Introduction

Meichenbaum (1985, p 1) states that *"*Metacognition refers to awareness of one's own knowledge—what one does and doesn't know—and one's ability to understand, control, and manipulate one's cognitive processes*"*. In the reading process, Anderson (2005, p. 359) defines it as a process that "concerns with learners' knowledge and their own cognitive resources, which involve behaviors such as predicting, self-questioning, paraphrasing, summarizing, re-reading to clarify meaning…"

This project aims at raising students' awareness on metacognitive knowledge by explicitly showing them what strategies they can put into practice to get meaning successfully when reading field content-based written texts in English (L2) at university during the instruction period of a compulsory reading comprehension course in the Nursing career offered by the School of Health of the Sede Regional Orán. For the purpose of this study, it is worthwhile noticing the difference between cognition and metacognition.

The former refers to basic mental abilities we use to think which include resorting to schemata (using background knowledge), recalling information from memory, making associations, comparing/contrasting different pieces of information, making inferences, and using text clues among others. The latter makes reference to behaviors undertaken by

learners to plan how to approach a task using appropriate cognitive strategies to get meaning, and to monitor the process in order to solve a problem, self-assess, self-correct, evaluate progress towards completion of a task, become aware of distracting stimuli among others. To make it shorter, it has to do with thinking about one's own learning process. In this project, thinking about thinking refers to students' thinking about their own reading process. Thus, they will be able to select or discard the right cognitive tools to accomplish the required task. Fountas and Pinnell (2000) state that: "metacognition literally means "big thinking". You are thinking about thinking".

2. Relevance in the field

Metacognition awareness when reading for comprehension in L2 is significant as it is a process that allows readers to think about their own reading process every time they are exposed to actual instances of field-based written texts in L2. By being cognizant of cognitive strategies, and about metacognition students can build knowledge to monitor their reading process and use specific strategies to get meaning and/or solve lack of understanding.

Based on the instructor's teaching experience at the university with students who attend compulsory reading comprehension courses, cognitive monitoring while reading for comprehension in a foreign language (L2) has been an issue not commonly found among them. Students' ability to self-control and regulate their comprehension process is most of the time taken for granted as it is wrongly assumed they have already got metacognitive reading strategies when reading texts in their mother tongue, Spanish (L1). On the basis of experience and on the results obtained in the practice tests taken, it has been observed students' limited ability to interpret texts in L2, presumably, because of their lack of knowledge about metacognitive reading strategies. The hindrance observed reflected in the low scores students got in their reading comprehension tests indicated the need to intervene during instruction in a systematic explicit way to raise awareness on what cognitive strategies they can resort to in the reading process and to show them explicitly how metacognition works in the three moments of the reading process.

The limited ability observed in reading comprehension tests indicates the need to intervene during instruction in a systematic explicit way to show students what metacognitive strategies to use when reading for comprehension.

Fountas and Pinell (2000) refer to teachers' intervention in the following citation.

> "Teachers work to guide students to become more strategic thinkers by helping them understand the way they are processing information. Questioning, visualizing, and synthesizing information are all ways that readers can examine their thinking process. Through scaffolding and reciprocal teaching, students are able to practice the skills that lead to these overt acts becoming automatic"

Having identified this problem, a question arises:

Can students who attend a reading comprehension course in L2 at the Sede Regional Orán of the National University of Salta, get better academic achievement when reading field-based texts if they receive explicit instruction on metacognitive strategies?

This project is going to explore the field of language teaching and learning seen from the cognitive perspective. It is going to focus on making students aware of the metacognitive strategies needed to be able to comprehend text types they are made to read while attending the compulsory reading comprehension course at university. It is meant to help them improve their ability to deal with definitions, descriptions, classifications, narrations,

instructions and arguments (if possible) in L2 by putting the strategies mentioned into practice.

The teaching experience has shown that there is a growing lack of concern among non-native readers of texts written in English about their ability to self-monitor their reading process to be able to get meaning successfully when reading for comprehension. Fortunately, there seems to be enough evidence to be confident that strategy instruction can, indeed, be effective at helping students be successful readers, Muñiz-Swicegood, 1994; Chamot, Barnhardt, El-Dinary, & Robbins, 1996; Oxford & Leaver, 1996; Cohen, Weaver, & Li, 1998, p. 274. as well as O'Malley et al. (1985, p. 6) who have pointed out that "students without metacognitive approaches are essentially learners without direction or opportunity to review their progress, accomplishments, and future directions".

It is important to mention that readers' metacognitive knowledge in relation to the reading process may be influenced by a number of factors, including previous experiences and, in the case of non-native readers, proficiency in L2.

3. Theoretical framework and literature review

Reading comprehension courses in L2 at the Sede Regional Orán of the National University of Salta adhere to the concept of the reading skill as an interactive cognitive process in which readers interact with a text and the context. In order to get meaning, they are supposed to use cognitive strategies such as "*learning techniques, behaviors, problem-solving strategies or study skills which make learning more effective and efficient"* (Oxford and Crookall, 1989, p. 1).

When teaching reading at university, the teaching process is guided by theories such as **the Schema Theory** (Bartlett, 1932) and K. Goodman and W. Kintsch and T. Van Dijk (1983) with the **Interactive Model** which later on, in 1988, Kintsch extended into the so-called **Construction-Integration Model** (CI). Some other approaches are the **bottom-up** processing (Gough, 1972; Rayner and Pollatsek, 1989), **the top-down processing** (Goodman, 1975; Smith, 1971) and the **interactive models** (Rumelhart, 1977; Stanovich. 1980). **Constructivism**, inspired in cognitive psychology, is another paradigm this subject adheres to with Ausubel and Gagne as their main representatives.

Recent research has put attention on the study of metacognition, that is the study of behaviors (knowing when, where and how to use strategies) undertaken by learners to evaluate and self-monitor their own reading comprehension process - what students can do to solve problems while reading for comprehension. On a general level, metacognition includes awareness and control of planning how to approach the reading task, monitoring it, monitoring one's own comprehension of texts, using fix-up strategies to solve problems, revising, self-assessing and self-correcting, evaluating progress towards the completion of a task, summarizing and evaluating, and becoming aware of distracting stimuli.

Many researchers agree that awareness and monitoring of one's comprehension processes are critically important aspects of skilled reading. Bransford, Brown, & Cocking (2000, p. 4) agree on the fact that *in order for students to notice their errors and then repair mistakes, they must reflect on their performance*. Similar views about metacognition are shared among different authors and researchers. Wade, Trathen, & Schraw (1990, p.1) emphasized the idea that "readers' reflections show how they plan, monitor, evaluate, and use information available to them as they make sense of what they read". Such reflections unveil

judgements about the readers' thinking process that serve as descriptions of their metacognitive process while reading. Among other researchers who support teaching metacognition are Pressley & Afflerbach (1995); Brown, (1992); Carrell, (1989); Olshavsky, (1976-1977) who, in general terms say that learners who lack metacognitive approaches are those who have no direction or opportunity to reassess their progress, achievements and potential direction. Paris, Cross and Lipson (1984, p. 10) believe that readers will not adopt and use actions as reading strategies if they do not understand the value or reason for doing so.

Some researchers have a word about the necessity of teaching metacognitive strategies. Cohen (1998); Ellis & Sinclair (1989, p. 9) state that *"*strategy training is defined as the explicit teaching of how, when, and why students should employ language-learning strategies to enhance their efforts at reading language program goals". Therefore, as Akkakoson (2012, p 2) says *"*there is a need for teachers to provide effective explicit self-monitoring strategies in the three stages of the reading process for students to be aware of and develop better reading achievement*".* Carrell (1998, p. 2) states that to achieve resourceful comprehension, reading strategies should be augmented in the classroom to guide the students to become competent readers".

Metacognitive strategies can be taught" (Halpern, 1996, p. 2) and they are associated with successful learning" (Borkowski, Carr & Pressley, 1987).

4. Description and implementation of the project

This is a quali-quantitative, process-oriented, small scale, subjective, phenomenologist, and quasi-experimental, prospective action research work with controlled intervention. It is also a focused descriptive study as it will systematically describe an area of interest and it will concentrate on determining if two phenomena are related: explicit instruction on metacognition and academic achievement when reading for comprehension. It is also interventionist as it aims at improving one aspect of learning a foreign language, the reading comprehension skill. It is also an exploratory, inductive, process oriented study that will make use of real data.

5. Methodology

To start with, students were randomly divided into two groups in order to avoid biasing: the experimental group and the control group. They had to complete a survey to determine their general level of English. During the four-month period of instruction, students were made to read field-specific texts of around 200-250 words in English (L2), received theoretical lexico-grammatical and discourse instruction during a two-hour class. Individual practice tests were also taken. The oral language used is students' native language, Spanish, whereas the language used in the written texts is English.

During approximately the first two months of instruction and evaluation, students did not receive any systematic instruction on metacognition. During the last two months, they received deliberate systematic instruction on metacognition which they put into practice when doing weekly practice tests. These evaluations are designed by the teacher-researcher based on Ausubel's constructivist view and on the psycholinguistic theories mentioned in the introduction. These tests are continuous and cyclical and they are based on the text-types the course focuses on: expository texts that include definitions, descriptions, classifications

and narrations and also, instructions and arguments. Feedback on the results obtained were provided.

It is the aim of the project to research whether students can get better academic results when reading for comprehension if they become more skilled at using metacognitive strategies.

5.1 Procedure and data collection

To carry out this study, the following steps were taken at the beginning of the period of instruction:

- A survey on the students' level of English and their experience with their learning experience (Appendix 1).

- Survey on students' level of overall reading comprehension according to the CEFR (2020). (Appendix 2)

- A survey on metacognition in the reading process (Appendix 3 and 4)). To design the survey, different survey models were consulted, among them Fogarty (1994, p.2) who suggests a planning, monitoring and evaluating phase, the Metacognitive Awareness of Reading Strategies Inventory (MARSI) (Mokhtari, K. and Reichard, C. (2002), Kelley & Clausen--Grace, (2013, p.51-52) The Metacognitive Teaching Framework (MTF) and the Survey of Reading Strategies (SORS), developed by Mokhtari and Sheorey (2002). Items were also added based on my own experience and considering the three different reading moments: pre-reading, while reading and posts reading.

During the first two months of the course, the experimental group received no intervention from the teacher regarding metacognition in any of the three different phases of the reading process as suggested by Presley and Gaskins (2006, p.100): before, while and after reading. The first five practice tests were taken to both groups, control and experimental, and the results collected in percentages, considering 60% a passing mark.
Before the last five practice papers, the teacher worked with the control group and the experimental group in different ways:

Experimental group: The instructor explicitly role modelled metacognitive strategies during the three reading moments. She showed students how to put them into practice in order to show them, for example, how to self-monitor and repair comprehension breakdowns, resort to background knowledge connecting it to what the text says, infer meanings, work on and discard hypotheses among other strategies until meaning made sense. She did this in the top-down and/or bottom-up fashion taking pieces of a given text following Presley and Gaskins (2006, p.100).

After the last five practice tests, students were made to answer a survey about which metacognitive strategies they put into practice during the three reading moments when doing each test (Appendix 4).

Every two practice tests, students were given a questionnaire to inquire about the frequency each strategy is used (Appendix 5). Based on the information collected, the teacher will make

a qualitative interpretation in relation to the strategies that are **most used, sometimes used and least used**.

Control group: They were not instructed on metacognitive reading strategies. Students did the practice tests of which percentages were collected, considering 60% a passing mark. Each group did practice tests 6 to 10 on the same day but at different times.

6. Data analysis and interpretation

Data was collected during the instruction period in 2022. Both quantitative and qualitative data are going to be interpreted during 2023.

6.1. Quantitative analysis

Marks/scores (in percentages) from the tests the experimental group made are going to be gathered in order to make a parametric test of statistical significance.

6.2. Qualitative analysis

Information from the surveys and questionnaires will be characterized with graphics, charts and mode.

7. Results and conclusions

This project seeks to explore whether awareness and automaticity in relation to the use of metacognitive reading strategies when reading for comprehension field-content-based texts in L2 will improve students' academic achievement. It is expected that the students from the experimental group perform significantly better allowing them to get meaning successfully. This assumption was supported by different authors who claim that

> The integration of the metacognitive awareness into the classroom reading instruction has been found to be very useful in helping struggling students become more proficient readers and achieving significant gains in reading comprehension" (Alfassi, 2004: Blosk & Pressley, 2002).

This project also aims at determining which strategies are the most, sometimes and least used, so after making a proper quali-quantitative analysis, results, discussions and implications and will be shared.

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APPENDICES

Each survey was designed in a Google form format.

Appendix 1

Survey on students' level of English and about their learning experience

Answer the following questions in relation to your own experience regarding learning English as a foreign language and your level of English today. You can choose more than one option

1-What is your experience in relation to the English language?

a- I've never studied English
b- I studied another language (French, Italian, Portuguese)
c- I studied English in high school
d- I studied English in a private institution

2- What is your level of English today?

a- Basic

b- Intermediate

c- Advanced

3- Do you feel the necessity to learn a foreign language?

a- YES

b- NO

Why? (Justify your answer from question 3)

……

4- Have you ever read texts written in English?

a- YES

b- NO

5- Do you yourself consider a good reader?

a-YES

b-NO

Why? (Justify your answer from question 5)

…….

6- Do you think there are strategies that can help you improve the reading comprehension skill when reading a text written in English?

a- YES

b- NO

Which? (Justify your answer from question 6)

……

7- Do you think a translating machine is the only way to understand a text written in a foreign language?

a- YES

b- NO

Why? (Justify your answer from question 7)

……..

8- What are your personal expectations around the subject you are attending. You can choose more than one option,

- Pass the subject
- Broaden the knowledge of the language to be able to understand a text written in English
- Acquire strategies to be able to understand a text written in English
- I'm not interested in understanding a text written in a foreign language

9- Which do you think are your major difficulties at the moment of reading a text in a foreign language?

- Grammar
- Vocabulary
- Text types

10- Do you think you can monitor your own reading process of a text written in a foreign language?

a- YES

b- NO

If you chose "YES" answer this question: How do you monitor your own reading process?

……

Appendix 2

Survey on students' level of overall reading comprehension according to CEFR (2020).

OVERALL READING COMPREHENSION LEVEL

CHOOSE THE OPTIONS ACCORDING TO YOUR LEVEL OF ENGLISH TODAY

1- I can recognize familiar words/signs accompanied by pictures, such as a fast-food restaurant menu illustrated with photos or a picture book using familiar vocabulary. (PRE-A1)

2- I can understand very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required. (A1)

3- I can understand short, simple texts containing the highest frequency vocabulary, including a proportion of shared international vocabulary items. (A2)

4- I can understand short, simple texts on familiar matters of a concrete type which consist of high frequency every day or job-related language. (A2+)

5- I can read straightforward factual texts on subjects related to their field of interest with a satisfactory level of comprehension. (B1)

6- I can read with a large degree of independence, adapting style and speed of reading to different texts and purposes, and using appropriate reference sources selectively. Has a broad active reading vocabulary, but may experience some difficulty with low-frequency idioms. (B2)

7- I can understand in detail lengthy, complex texts, whether or not these relate to their own area of speciality, provided they can reread difficult sections. (C1)

8- I can understand a wide variety of texts including literary writings, newspaper or magazine articles, and specialized academic or professional publications, provided there are opportunities for rereading and they have access to reference tools. (C1)

9- I can understand a wide range of long and complex texts, appreciating subtle distinctions of style and implicit as well as explicit meaning. (C2)

10- I can understand virtually all types of texts including abstract, structurally complex, or highly colloquial literary and non-literary writings. (C2)

Appendix 3 and 4

Survey on the metacognitive strategies students resort to, or not, before the period of instruction.
The same survey had to be answered after the practice tests.

PRE-READING STRATEGIES

What strategies do you put into practice during the pre-reading moment? For each item, choose YES or NO.

1.I have a reading purpose in mind (to interpret; not to translate).
YES NO
2. I know how much time I have to complete the task.
YES NO
3. I preview the text to see what it's about before reading it.
YES NO
4. I skim the text first by noting characteristics like length and organization.
YES NO
5. I observe the text structure
YES NO
6. I can identify context clues that help me understand (known and transparent words).
YES NO
7. I observe the paratext (everything that goes with the text).
YES NO
8. I observe the text and its different parts to activate previous knowledge.
YES NO
9. I can make predictions about what the text is about in its different parts/sections.

YES NO

10. I ask myself questions about the topic to check comprehension.
YES NO
11. I think about what I know to help me understand what I read.
YES NO

WHILE READING STRATEGIES

a- I decide what to read and what not to read
YES NO
b- I read slowly but carefully to be sure I understand what I'm reading
YES NO
c- I use a graphic organizer to help me understand
YES NO
d- I highlight, underline, circle and /or take notes to increase my understanding
YES NO
e- I can infer the meaning of a word without looking it up in a dictionary
YES NO
f- When the text turns difficult to read, I go back and forth
YES NO
g- If I do not understand, I give up the idea I'm trying to elaborate
YES NO
h- If the context clues do not help me, I read the part of the text I'm trying to understand again
YES NO
i- If I cannot make conceptual associations with the new information, I observe/read again
YES NO
j- I analyze and assess the new information critically (does it make sense?)
YES NO
k- I discard hypotheses and elaborate the concept again.
YES NO
l- I associate the content of a proposition with another one.
YES NO
m- If I cannot associate two propositions, I observe/read again till the concept makes sense
YES NO
n- When I loose concentration, I give up
YES NO
o- When I lose track, I take a rest and start again
YES NO
p- When the topic is difficult to understand, I read again paying closer attention.
YES NO
q- If the text is difficult to read, I read as many times as necessary
YES NO
r- I read too fast
YES NO
s- If I read quickly, I try to read more slowly.
YES NO
t- I adjust my reading speed according to what I'm reading.
YES NO
u- I stop from time to time and think about what I'm reading.
YES NO
v- If I cannot infer the meaning of a word, I use reference materials such as dictionaries to help me understand what I read.
YES NO
w- If I have grammar problems, I try to infer the global meaning of the sentence.

YES NO

x- I summarize what I read to reflect on important information in the text.
YES NO

y- I discuss what I read with others to check my understanding
YES NO

z- I paraphrase (restate ideas in my own words) to better understand what I read.
YES NO

POST-READING STRATEGIES

a. I think of possible reasons that hindered understanding
YES NO

b. I try to identify possible strategies that helped me understand

YES NO

c. I change my reading strategies because I could not comply with the task required

YES NO

d. I put into practice strategies that permitted understanding again

YES NO

Appendix 5

Survey on frequency of metacognitive reading strategies after the last five practice tests. For each item, choose the option that best suits the frequency with which you put each strategy into practice

1 means "never"
2 means "occasionally "
3 means "sometimes"
4 means "usually"
5 means "always"

STRATEGIES	**SCALE**				
PRE-READING STRATEGIES	**1**	**2**	**3**	**4**	**5**
1. I have a reading purpose in mind (to interpret; not to translate)					
2. I know how much time I have to complete the task					
3. I preview the text to see what it's about before reading it.					
4. 4. I skim the text first by noting characteristics like length and organization.					
5. I observe the text structure.					
6. I can identify context clues that help me understand (known and transparent words).					
7. I observe the paratext (everything that accompanies with the text).					
8. I observe the text and its different parts to activate previous knowledge.					
9. I can make predictions about what the text is about in its different parts/sections.					
10. I ask myself questions about the topic to check comprehension.					
11. I think about what I know to help me understand what I read.					

WHILE READING STRATEGIES

a- I decide what to read and what not to read.
b- I read slowly but carefully to be sure I understand what I'm reading
c- I use a graphic organizer to help me understand.
d- I highlight, underline, circle and /or take notes to increase my understanding.
e- I can infer the meaning of a word without looking it up in a dictionary.
f- When the text turns difficult to read, I go back and forth.
g- If I do not understand, I give up the idea I'm trying to elaborate.
h- If the context clues do not help me, I read the part of the text I'm trying to understand again.
i. If I cannot make conceptual associations with the new information, I observe/read again.
j. I analyze and assess the new information critically (does it make sense?).
k. I discard hypotheses and elaborate the concept again.
l. I associate the content of a proposition with another one.
m. If I cannot associate two propositions, I observe/read again till the concept makes sense.
n. When I loose concentration, I give up.
o. When I lose track, I take a rest and start again.
p. When the topic is difficult to understand, I read again paying closer attention.
q. If the text is difficult to read, I read as many times as necessary.
r. I read too fast.
s. If I read quickly, I try to read more slowly.
t. I adjust my reading speed according to what I'm reading.
u. I stop from time to time and think about what I'm reading.
v. If I cannot infer the meaning of a word, I use reference materials such as dictionaries to help me understand what I read.
w. If I have grammar problems, I try to infer the global meaning of the sentence.
x. I summarize what I read to reflect on important information in the text.
y. I discuss what I read with others to check my understanding
z. I paraphrase (restate ideas in my own words) to better understand what I read.

POST-READING STRATEGIES 1. I think of possible reasons that hindered understanding 2. I try to identify possible strategies that helped me understand. 3. I change my reading strategies because I could not comply with the task required. 4. I put into practice strategies that permitted understanding again.					.

Appendix 6

Charts for Final Report 2023

Scores got by the control and the experimental groups will be compared (CG: control group; EXP G: Experimental group)

Level of achievement

PRACTICE TESTS		
PRACTICE TESTS	**Scores (in percentages) CONTROL GROUP No interv, on metacog**	**Scores (in percentages) EXPERIMENTAL. GROUP Intervention on metacognition from test 5 to 10**
Practice test 1		
Practice test 2		
Practice test 3		
Practice test 4		
Practice test 5		
Practice test 6		
Practice test 7		
Practice test 8		
Practice test 9		

Practice test 10	

Appendix 7

Chart for final report 2023

Metacognitive strategies frequency of use

STRATEGIES		
Most used	**Sometimes used**	**Least used**